Remarks

(Applicant responses provided herein are referenced to the original specification PCT/CA2003/000909 published as WO 2004/002052, since examiner comments emphasize need for referencing to the original specification).

Ad. 1-2

Has been corrected.

Ad. 3 - 5 and 15

~~Such IDS is supplied herein as "dspmsp-ids_sb08-09feb02.pdf" listed above.~~

Based on the Examiner recommendation; such previously faxed IDS verified already, is planned to be submitted with a subsequent RCE or Continuation.

Ad. 6-7

No comments.

Ad. 8 - 10 & 23 & 27

In order to expedite prosecution of the present application:

the applicant has canceled claim 68 in the "dspmsp-formal_resp2-clm-09feb21.pdf",

knowing that the subject matter addressed by claim 68 may be pursued and/or addressed within an RCE or Continuation:

Although claim 68 is presently canceled applicants arguments discussing the rejection of claim 68, are recited below as they might be useful during such pursuing of claim 68 with RCE or Continuation.

The substantially different ways of this invention's data recovery, enabling such substantially different results, are recited by the elements (limitations) of claims 68-69 as it is explained below by applying relevant PTO rules.

It is respectfully presented that:

1. The differentiating future which the applicant relies upon, explained in the wider context in the applicant response to 1st OA (in Ad12 / A1 & A2 and Ad.15), is supported by the legal facts presented below:

this invention's synchronous data recovery (SDR) derives number of received data bits by much more direct estimation of a number of sampling clock periods (comprised in an inter-transition interval) without any utilization of an expected width of data bit (calculated statistically),

while Reuveni's asynchronous data recovery solution (DRS) utilizes such expected bit width for fundamentally different derivation of the received bits number, by dividing such interval length by the bit width.

2. Such differential future (i.e. said direct estimation without any usage of the bit width) is shown in the claim 68;

since the last element of claim 68 "calculation of a number of data bits received in the pulse by using said evaluation of the pulse length.", does not include any utilization of expected bit width being the essential subject matter for the DRS solution.

3. In accordance to the 7.33.01 Rejection, 35 U.S.C. 112, 1st Paragraph, Essential Subject Matter Missing From Claims, such omission clearly differentiates SDR claimed by claim 68 from the DRS solution:

since claim 68 with such omission, cannot cover any solution comprising such essential usage of bit widths;

while DRS can not be considered without such usage of bit widths being the essential subject matter critical and essential to the practice of the DRS presented in the description of U.S. 6,987,817.

4. The subsection 27. of the 2nd OA (characterizing DRS with the same set of elements as that stated in the 1st action) presents the 3rd element of DRS as resembling the 3rd element of claim 68 (without any usage of the bit widths), as it is cited below:

"calculating a number of data bits received during the inter-transition interval by evaluating the length of the inter-transitional interval". (packed output data circuit 174 calculates and outputs the number of data bits per symbol time; see col.17, 7-26).

5. Since col.17, 7-26 describes the circuit 174 (shown in Fig.6 & Fig.10) as dividing "the lengths of the inter-transitional interval" (represented by the HIGH DATA / LOW DATA) by the bit width (named and shown as WIDTH);

such existence and usage of the bit width represent the essential subject matter which can not be missed from any DRS claim in accordance to the 7.33.01 Rejection rule.

6. The well known requirement of best mode disclosure prevents construction of claims covering solutions significantly better than those disclosed in a specification:

therefore claim structures made of elements disclosed by U.S. 6,987,817 can not be supplemented with such 3rd element of DRS (never disclosed therein without such division of the pulse lengths by bit width), as it would expand resulting claim coverage to the much better mode of operation covered by claim 68 (having its 3rd element supported clearly by this invention disclosure).

The same application of such PTO rules to elements recited in claims 88-91, can prove the same substantial differentiation of SDR claimed with them versus DRS using such bit width.

Ad. 11-12

In order to expedite prosecution of the present application:

such declaration confirming the preponderance of evidence is not supplied within the present application which is in the advanced stage already as claims 69, 88-91 are close to allowance.

Nevertheless arguments supporting non-enabling character of the most similar DRS part of the previous art, are recited below as they may influence further prosecution of this application and/or an RCE or continuation.

Conclusive factors, deciding that data recovery solutions (DRS) taught in U.S. 6,987,817 are not enabling, have been explained in the applicants response to 1st OA in Ad.12.

More formal declaration confirming such preponderance of evidence provided already in this Ad. 12 can be supplied if it is still needed.

Such declaration can be expanded even further by explaining other key factors, causing these DRS teachings to be non-enabling, such as undefined character of statistical methods applied to bit width calculations.

It is generally known that statistical methods are applied as the last resort only, when deterministic methods are not applicable due to unknown character of variables involved, since they require that:

statistical analysis of input variables (such as phase noise) is conducted in order to define their distributions,

based on such analysis appropriate statistical method is chosen and refined to accommodate static and dynamic characteristics of entire system in order to achieve satisfactory distributions of data recovery errors on the output of entire system.

Such implementation of statistical methods require extensive experimentation deriving such phase noise distributions and advanced knowledge of mathematics higher than that expected from those with ordinary level of skill.

Therefore such DRS teachings, stating merely that statistical methods shall be applied without any addressing of the challenging key aspects mentioned above, can not be treated as enabling.

Ad. 13, 19, 24, 26, 28 and 29

The "OR" term has been replaced with the "AND" or eliminated.

Ad. 14

It is respectfully presented that:

The patentable novelty which SDR and its claims present and fundamental advantages enabled by such novelty, have been pointed out and explained in the applicants response to 1st OA (see Ad.12 / A1 & A2 and Ad.12 / B1 & B2 accordingly).

It has been explained in Ad.12 / A1 that

SDR utilizes simpler measurement of inter-transition interval length and derives number of data bits received by direct estimation of such interval length, while DRS utilizes more complex interval measurement and derives received bits number by dividing such interval length by an expected widths of data bit.

The last 2 paragraphs of Ad.15 of applicants response to the 1st OA, indicated the prime significance of researching differences between entire DRS and SDR solutions for deciding novelty and pointed out specifically that:

the bit width calculated statistically is essential for every DRS operation and "it needs to be included in every set of DRS features brought up for comparing DRS with SDR".

Such notice pointed out distinctively that

the language of the claims 68-69 and 88-91 (never mentioning any usage or derivation of the bit width) distinguishes them from every acceptable set of DRS elements (requiring inclusion of such bit width),

and that it is the set of DRS elements presented in the subsection 15 of 1st OA (and repeated in the subsection 27 of 2nd office action) which needs to be corrected by including said usage and/or calculation of the bit width.

~~In situation where specific MPEP rules deciding rejection or allowance of claims 68-69 and 88-91, are not communicated to the applicant,~~
~~the applicant notice quoted above is both specific enough and general enough to distinguish such SDR claims from every set of DRS elements representing claims compliant with USPTO rules and regulations (see also Ad. 8 - 10 & 23 & 27 presented above).~~
~~More specific replay could be to narrow to cover application of different rules than those guessed by the applicant and/or other sets of DRS elements different than that presented in the subsection 15 of 1st OA.~~

Ad. 16 - 18

In order to expedite prosecution of the present application:
the applicant has removed such Background Art amendments from the specification,.

Such removal implements latest Examiner recommendation to eliminate explanations of background art citations from the Background Art section;
by reversing the Background Art section to that originally filed supplemented with the last 2 paragraphs filed on 11/19/2007 as supported by the references to the original specification shown in the marked up version of Background Art amended previously and repeated in the marked Background Art amended presently (see the "dspmsp-form_repl2-spec_marked-09feb21").

However in order to inform about the closest background art known to the inventor; an updated summary of background art presented in applicant previous communications, is attached herein in "Summary of Background Art - 09feb21.pdf" supplied as the additional part of the inventor remarks within this replay to Last OA.
The List of Citations (following the Background Art section reduced to the part filed originally) has a reference to such summary of background art available as the part of remarks.

Nevertheless since such amendments of background art were just following the common practice of updating application with references to closest background art discovered during prosecution process, ~~It is respectfully presented that:~~ arguments supporting such practice are presented below:

1. Since the amendments of the Background Art section characterizing previous solutions (D1-D5) never mention the DSP MSP invention, such amendments shall not be treated as new matter as they can not "introduce new matter into the disclosure of the invention" made in the next parts of the specification.

~~2. The fact that such characterization of previous solutions is located in the "Background Art" section which can not supplement patentable subject matter supporting any kind of claims, provides even greater assurance that such amendments can not "introduce new matter into the disclosure of the invention".~~

2. Since such amendments are limited to the application of common knowledge to the background solutions, they can not introduce new matter nor new patentable substance into claims based on such amended specification.
3. Such amendments of the Background Art are ~~essential~~ important for securing sufficient quality of the specification and for ~~enabling~~ improving ~~efficient~~ efficiency of examination process, since they show DSP MSP positioning (critical for claims examination) in such primary place instead of having such vital information displaced to much less visible remarks.
4. Furthermore such inclusion of concise technological summary into the eventual patent publication, shall greatly improve value and usefulness of such publication for facilitating further technological progress and for inspiring inventions made by others.

~~In addition to such amendments characterizing D1-D5 without mentioning DSP MSP invention, the Background Art has been supplemented also with the 2 last paragraphs summarizing DSP MSP contributions supported by the texts of original specification pointed out in brackets on the marked copy filed on 19 Nov 2007.~~

~~The above mentioned two kinds of amendments have been accepted originally (before the second office action), by the Examiner and independently by the EPO, as not introducing any new matter.~~

~~In view of the above explanations, it is respectfully submitted that:~~
~~The amendments of the Background Art characterizing D1-D5 without mentioning DSP MSP solutions and the last 2 paragraphs supported by the original specification, are reconsidered and passed to allowance.~~

Ad. 20 & 21

Re: Claim 88

While such utilization of a known frequency relation for measuring a lengths of data carrying pulses is the basic feature of this invention explained throughout all major parts of it's disclosure, a representative set of references, showing compliance with the WDR of 1st paragraph of 35 USC 112, is respectfully presented below.

The recited limitation "measurement of a length of a pulse of the signal occurring between said phases of signal edges, based on a known relation between a frequency of the sampling clock and a frequency of a received signal clock", is supported in the original specification as it is shown below:

- general description of measurements of "relation between a frequency of incoming signal clock and a frequency of the sampling clock", is provided in &2/p.7;
- detailed implementation of such measurements of frequency relations, conducted as measurements of "frequency differences between a frequency of incoming data stream

and a frequency of the sampling clock" (see &9/p.24 starting section 7 of Description of the Preferred Embodiment), and communication of such frequency measurements results to a Programmable Control Unit (PCU), are described by the entire section 7 starting on p.24;

- purpose and utilization of such frequency measurements, allowing PCU and PSA circuits to "correct the effects of frequency differences between a frequency of incoming data stream and a frequency of the sampling clock, if said frequency differences are measured and communicated to the PCU", are described in the &9/p.24 starting such section 7;
- more specific utilizations of said frequency measurements, comprising "two different methods for accommodating a phase skew between the sampling clock and a clock which drives the incoming wave-form, and both methods allow elimination of ambiguities and errors in decoding incoming signal data patterns" wherein "both above mentioned methods include measurements of phase or frequency deviations of the incoming signal clock versus the sampling clock, and using said measurements results to control the clock synthesizer or to calculate the expected phase skews", are described in &1/p.5;
- even more specific and detailed utilization of such frequency measurements (named equivalently as "periodical phase skews") for implementing "modifications of the registered number of sampling clocks, in order to receive an accurate number of data bits for a long data string", is described by the entire section 5 (of Description of the Preferred Embodiment) starting on p.17.

It shall be noticed that as it is obvious for those skilled in the art:
the term "frequency relations" obviously comprises the term "frequency differences",
the terms "frequency differences" and "frequency deviations" and "periodical phase skews" (clearly defined in the 1st and 2nd paragraph of said section 5) are fully equivalent and such different names are used only to make different contexts easier to read.

Since the statement "The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention"

does not take into account such relevant descriptions provided in the original specification and related drawings, it can not be applied to claim 88.

Re: Claims 89-91

Such perception that the limitation of claim 88 does not comply with the written description requirement, has been extended to claims 89-91 based on addressing them as reciting such limitation of claim 88 "and variants thereof".

However relevant parts of the original specification (mainly those listed above in Re: Claim 88) can provide sufficient support for claims 89-91.

Nevertheless more specific references to texts supporting terms & elements of claims 89-91 different than those of claim 88, are provided below:

1. the 1st limitation of claim 89 " maintaining a known frequency relation between a sampling clock and a received signal clock;" is supported by &2/p.7 and &9/p.24 and &4/p.17 and &1/p.5,

since said known frequency relation (measured in &2/p.7) obviously includes frequency deviations (equal to frequency differences of &9/p.24 and periodical phase skews of &4/p.17) utilized

for implementing such frequency relation by frequency alignment or for eliminating expected phase skews (see &1/p.5 and &4/p.17).

2. the 1st limitation of claim 90 " producing a sampling clock which maintains a frequency alignment with a received signal clock;" is supported by &1/p.5, and the 3rd limitation of this claim is supported by this &1/p.5 combined with &2/p.8 and &5-7/p.12 and the original claims 65-66.

3. the 1st limitation of claim 91 " measurement of a frequency relation between a sampling clock and a received signal clock;", is supported by the &2/p.7 and &9/p.24 and by entire section 7 of Description of the Preferred Embodiments.

Consequently the statement "The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention", can not be applied to claims 89-91.

Re: Claims 88-91

In view of the facts presented above it is respectfully submitted that the rejections of claims 88-91 are reconsidered and those claims are passed to allowance.

Ad. 22

No comment.

Ad. 25

Such recitation has been changed to "sub-clocks of a sampling clock".

Conclusion

Based on the implementation of ~~required~~ amendments ~~and the above clarifications~~ required in the Last OA and in the Interview Summary, it is thus respectfully submitted that the invention taught and defined herein by the claims embodies patentable subject matter.

The Examiner is earnestly solicited to give favorable consideration to this application and pass it to allowance.

Respectfully submitted,

By: _____ 21 / February / 2009

John W. Bogdan